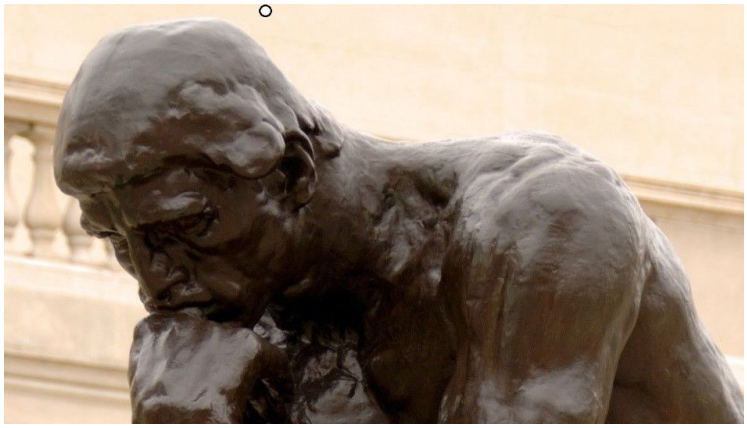


Design Thinking

Design thinking is a problem-solving framework that allows information and ideas to be organized, decisions to be made, situations to be improved, and knowledge to be gained in order to extract the optimal solutions.

“In short, design thinking converts need into demand. It’s a human-centered approach to problem-solving that helps people and organizations become more innovative and creative.” – Tim Brown, CEO and President of IDEO.

What characterizes this methodology?

This methodology is a human-centered, design thinking follows the approach used by first-class designers: it puts the needs of the customers first. Tim Brown, CEO of international design firm IDEO, once explained it like this: "Design is human-centered. It may integrate technology and economics, but it starts with what humans need."

Why Design Thinking?

- It saves a lot of time,effort and resources that can be consumed without studying customer needs. you can introduce the best product ever but client doesn’t need it :(so when you study your customer needs well that will guarantee a strong long term relationship.
- Design thinking is about finding innovative, creative and out of the box solutions to solve the challenges that human meets. Did you know that Google

formally allows 20% of their employees' time to think? That says a lot about the value of thinking.

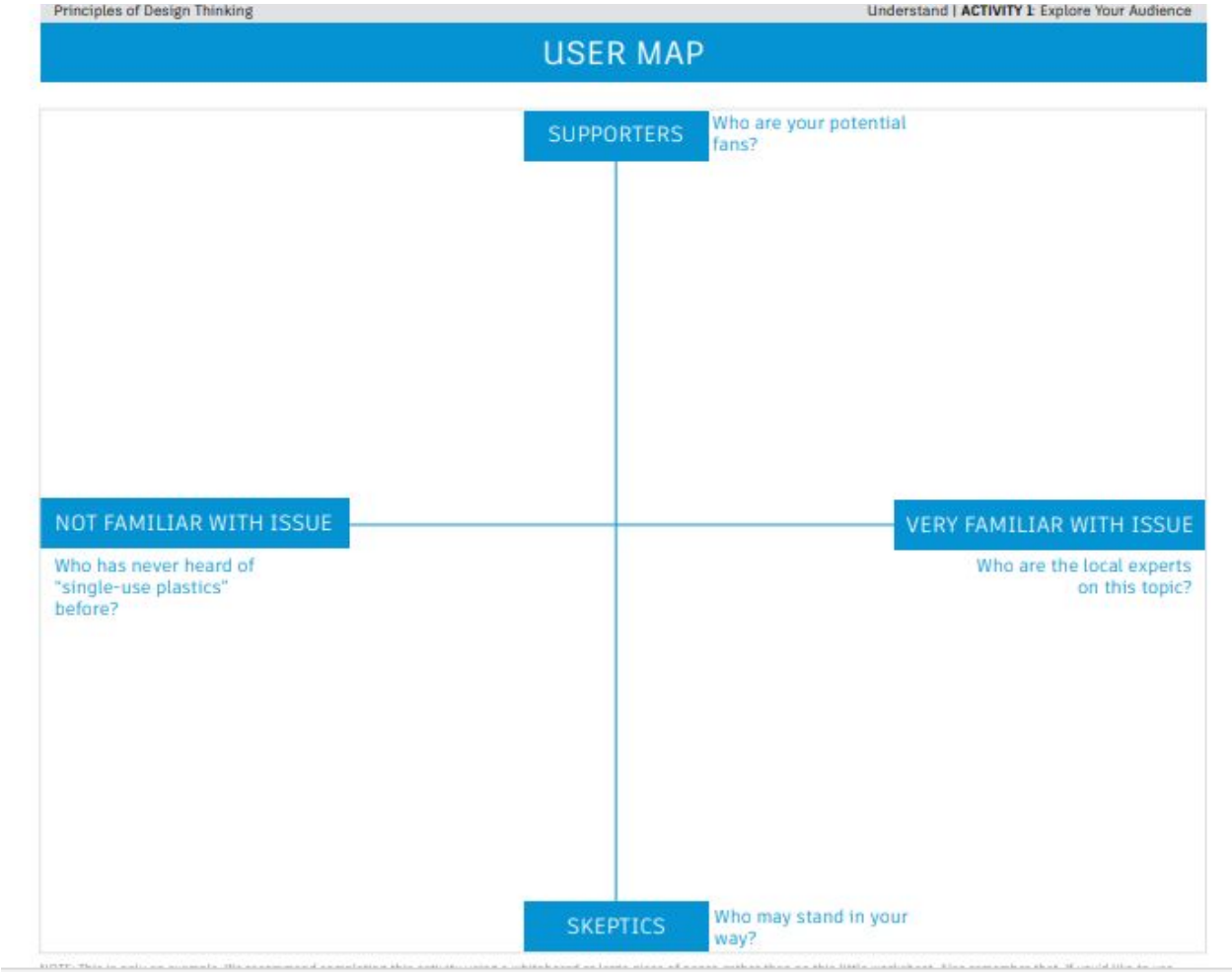
- *"A problem well-stated is a problem half-solved."*
- By applying Design Thinking methodology, the success rate of project improve by 5-10x.
- Understanding how business users will interact and use the data insights, is key in reaching a successful solution.

Before we start,we will need some materials:

- Sticky notes
- Marker
- Whiteboard or empty wall space

Understand

- **Activity 1: User Map**
  - Define your audience "from your community like your uncle or general stereotypes like 6th grade children" one sticky note per a person
  - which organization "nonprofit-business-government agencies-groups" are affected by this challenge ?? one sticky note per idea or organization
  - You should now have a whole bunch of sticky notes with names of different potential users. Next, we're going to sort these responses using a 2 x 2 matrix like the example.

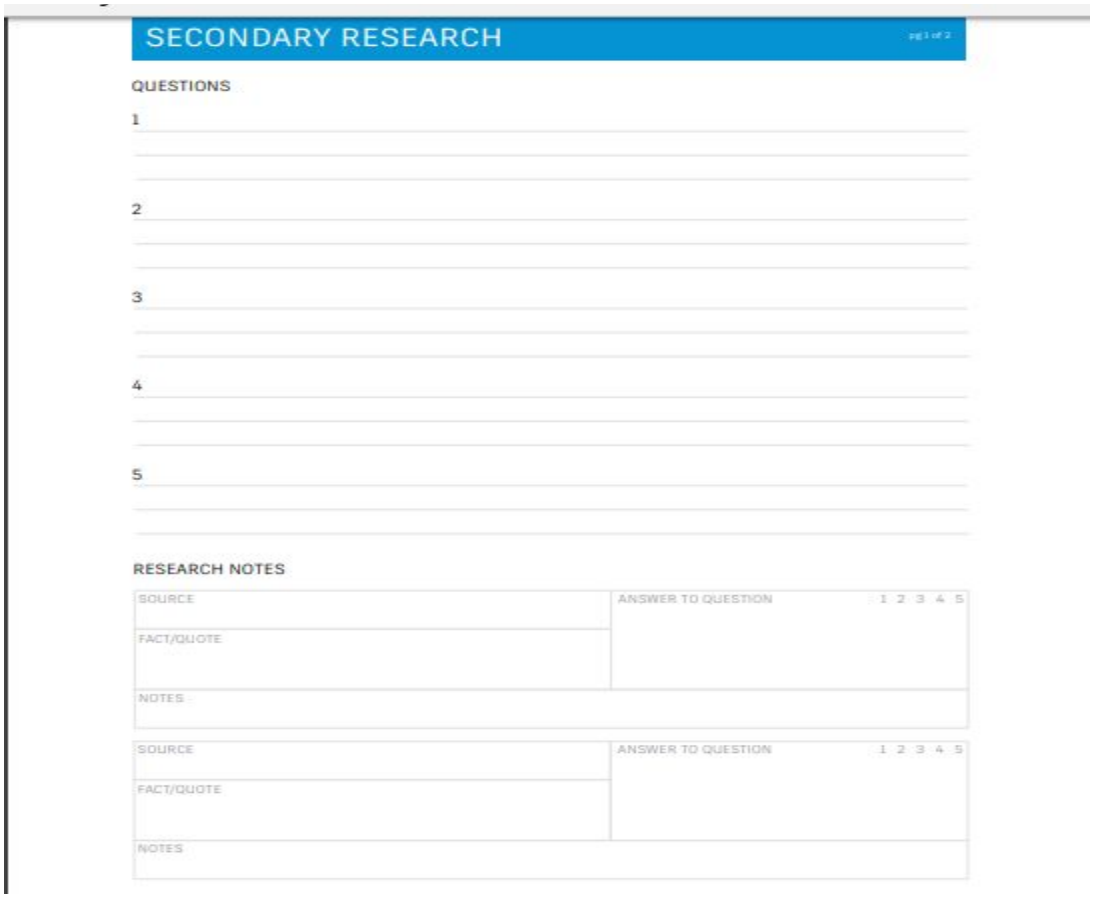


- **Activity 2: Five Why's**
    - All you need to do is find someone to interview from your User Map, ask a broad question, and then continually dig deeper by asking “Why...?” follow-up questions
    - There are no right or wrong questions to ask; the purpose of the activity is simply to explore the roots of a person’s decisions and behavior
    - Avoid leading questions. For example, instead of asking if they think that solution is important, ask about their own habits related to the idea of solution.

- **Activity 3: Secondary Research**
  - Being a design thinker requires gathering original data about a particular group of users. Secondary research, on the other hand, involves gathering existing information from external sources like journal articles, books, and other credible publications
  - Write down three-to-five key questions you have about the design challenge. Focus on information that you believe will be crucial to moving forward. For example, you may decide it's important to answer the following: "What is the largest source of this solution in your country?" or

"What are the top innovations in this area and why did (or didn't) they work?"

- Review the content you've collected and take notes on your findings. Be sure to note your sources.



SECONDARY RESEARCH

QUESTIONS

1

2

3

4

5

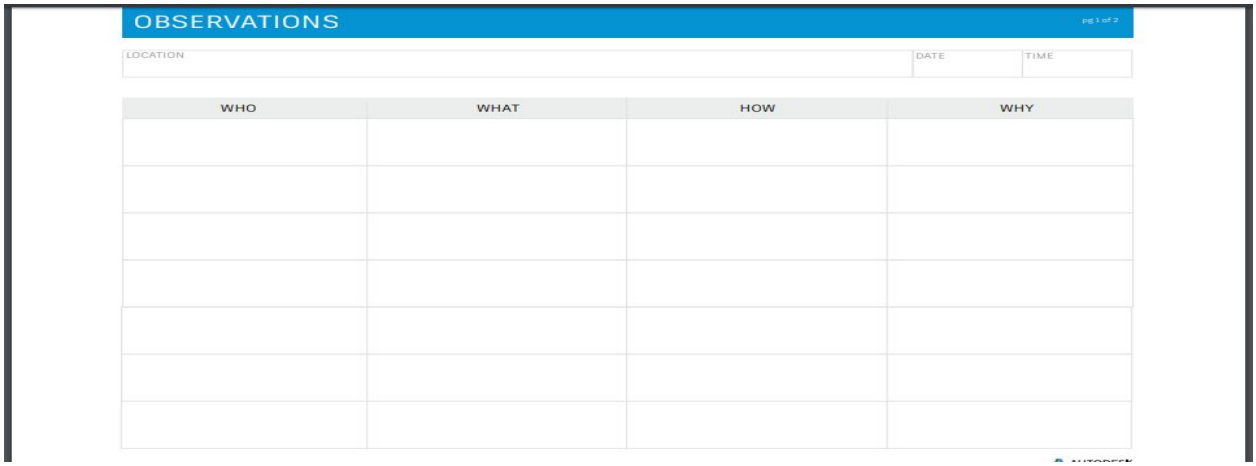
RESEARCH NOTES

SOURCE	ANSWER TO QUESTION 1 2 3 4 5
FACT/QUOTE	
NOTES	
SOURCE	ANSWER TO QUESTION 1 2 3 4 5
FACT/QUOTE	
NOTES	

- **Activity 4: Observation**
  - Observation is a technique used by designers to draw connections between what is happening in a particular environment and the feelings and motivations of the people within that environment. In this activity you'll try to figure out what people are doing and why they're doing it without actively interacting with them.
  - an observer, your job will be to watch and listen to the people around you and record their behavior: the who, what, how, and why. The where and when of the story are up to you; the only requirement is to choose a time

and a place where you're likely to encounter some of your users. If you're not sure where that might be, review your User Map from Activity 1 and brainstorm locations where you might find the people you listed.

- For example, you've chosen to sit at a local fast food restaurant. One line of your Observations Worksheet might look like this:
  - Who: A little girl, possibly two years old, sits in a booster seat.
  - What: She plays with a plastic toy and three plastic straws.
  - How (note behavior or visible feelings): She's giggling; she seems to have more fun with the straws than the toy.
  - Why: The girl's mother is on phone and not paying attention to the child; the girl is entertaining herself.



- **Activity 5: Data Gathering**
  - Gathering original data can be a great way to fill gaps in your existing knowledge and research.
  - This can be accomplished using a variety of methods including surveys, sensors, and observation.
  - Begin by selecting five-to-eight locations to visit. These can be restaurants, stores, public spaces or buildings, anywhere that might be related to your problem you solve.You'll then spend a 5–10 minutes at each location, observing the people within the space.For example, use the

next Community Plastics Audit Worksheet to note which single-use plastics are used in each location and write down your notes in each location.

DATA GATHERING: COMMUNITY PLASTICS AUDIT

pg 1 of 1

LOCATION	PLASTICS										NOTES
	cups	cup lids	straws	wrap/packaging	utensils	bottles	bags				

- **Activity 6: Interviews**
  - Interviews enable designers to better understand the beliefs, motivations, and thoughts of their users. In this activity, you will conduct at least one complete interview with a potential user of your solution. You had a taste of this exercise with the “Five Whys” activity, but conducting a full interview will typically elicit more comprehensive responses from your interviewee.
  - Once the interview is confirmed, use the Interview Worksheet (or a notebook) to prepare a minimum of five questions you’d like to discuss. You’ll have limited time in your interview, so be strategic with your questions.When it’s time to begin your interview, start by introducing yourself and building connection with your interviewee. Everyone should

feel comfortable When the time feels right, ask your first question. It may be useful to ask follow-up questions, but be mindful of your time. You'll want to make sure you're able to ask all of your remaining prepared questions.

- As you conduct the interview, keep the following guidelines in mind:
  - Listen and don't be afraid of a little silence. Your goal should be to speak as little as
  - possible while encouraging your interviewee to talk.
  - Stories are great and should be encouraged.
  - Ask for specific examples rather than generalizations. For example, instead of asking what they usually eat for breakfast, you might ask what they ate for breakfast today.
  - Avoid yes or no questions; they provide limited new information.
  - Be neutral. Avoid phrasing your questions in a way that suggests a "right" or"preferred" answer.
  - Take notes! If possible, use a recorder so you can review the conversation later, or ask a friend to be your note taker.
  - Watch your interviewee. Just like you did during the Observation Activity, make note of nonverbal cues and behaviors.
  - Don't be afraid to ask, "Why?" (Hopefully Activity 2 gave you some practice with this!)
  - Finally, thank your interviewee. Make sure they know how much you appreciate their input.

INTERVIEW

INTERVIEWEE DETAILS

NAME	AGE	DATE

NOTES

QUESTIONS

1

2

3

4

5

6

7

INTERVIEW

INTERVIEW NOTES

RESPONSE TO QUESTION: 1 2 3 4 5 6 7 OTHER (circle one)

RESPONSE TO QUESTION: 1 2 3 4 5 6 7 OTHER (circle one)

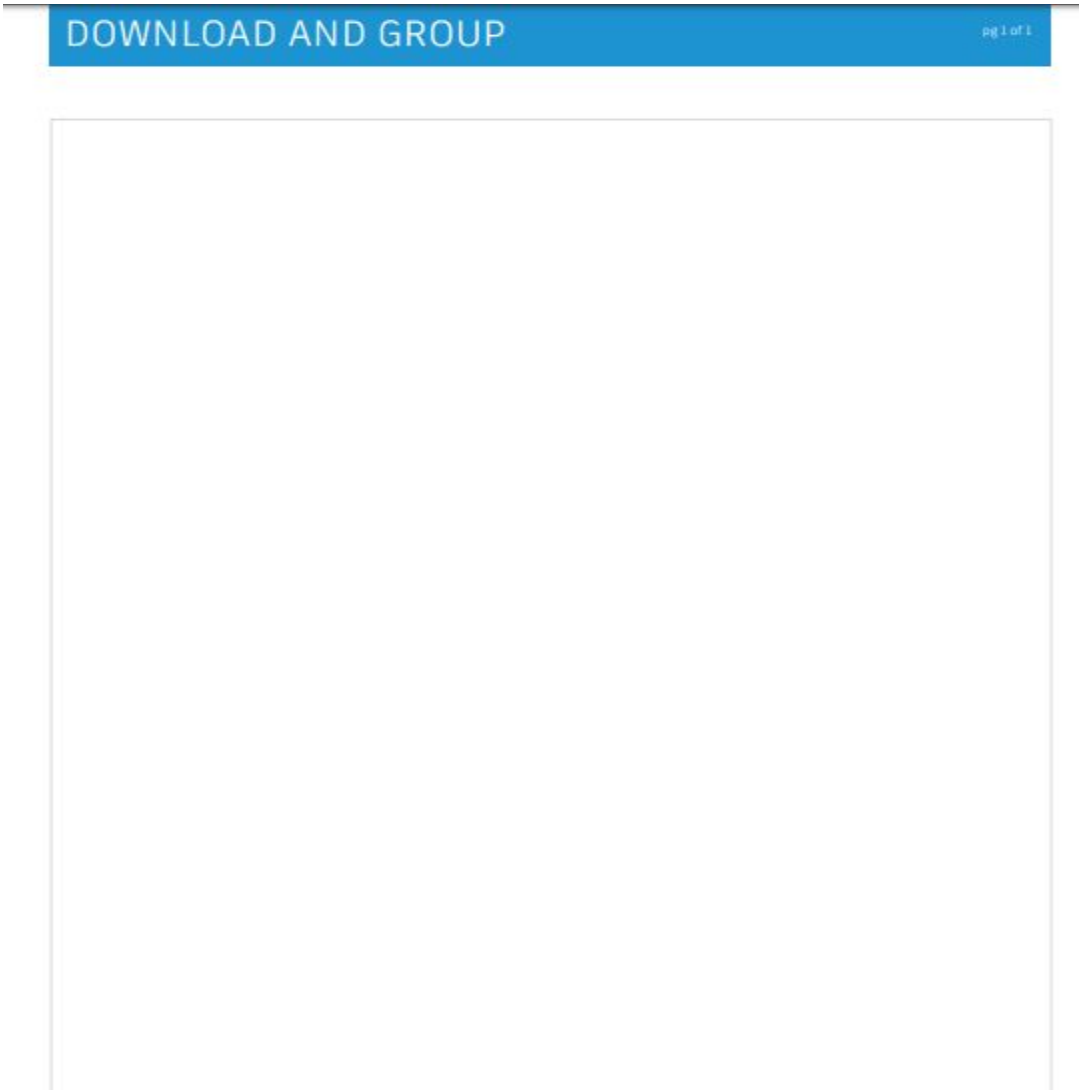
RESPONSE TO QUESTION: 1 2 3 4 5 6 7 OTHER (circle one)

RESPONSE TO QUESTION: 1 2 3 4 5 6 7 OTHER (circle one)

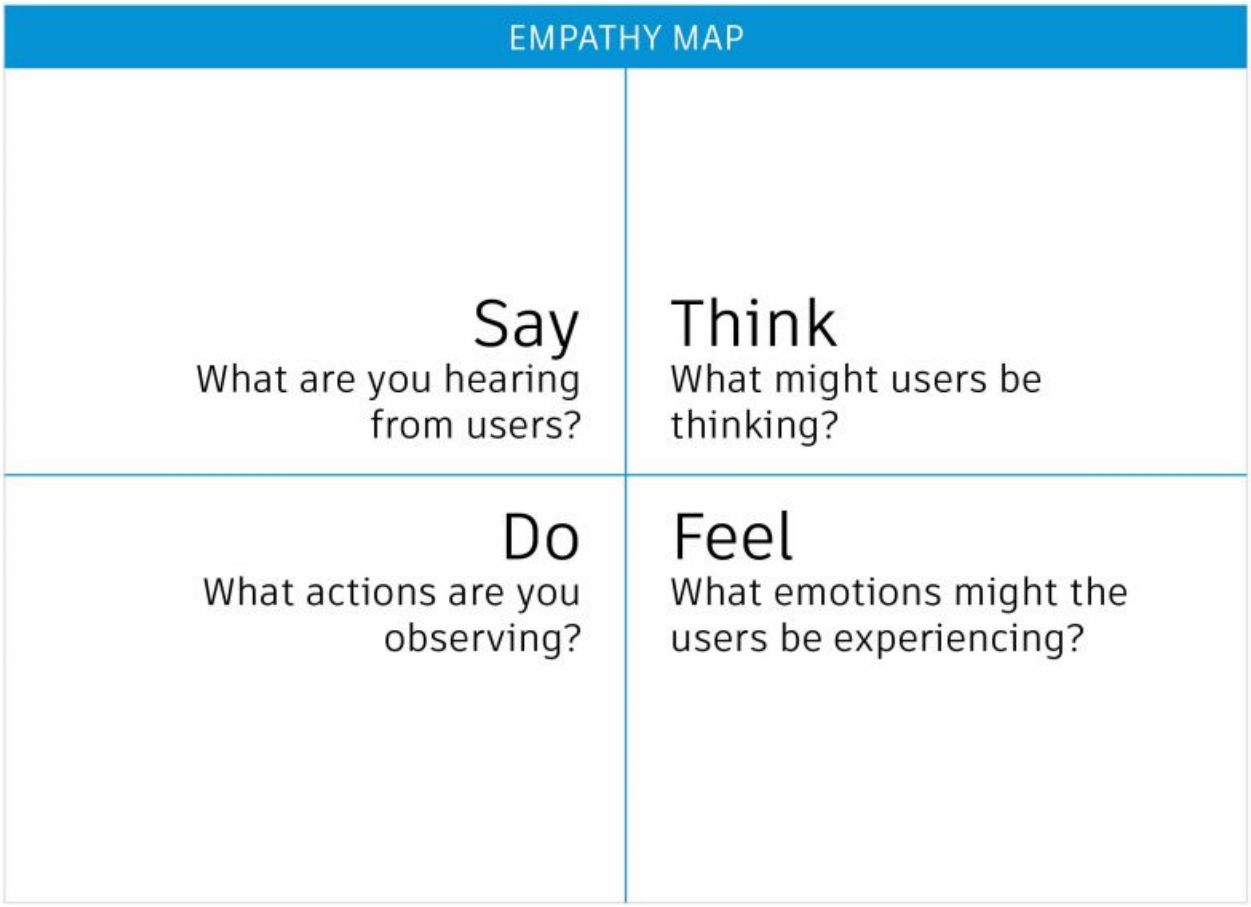
RESPONSE TO QUESTION: 1 2 3 4 5 6 7 OTHER (circle one)

Define

- **Activity 1: Download and Group**
    - After you've captured your thoughts on sticky notes, it's time to group them with similar ideas. Begin to reorganize your sticky notes into categories. What patterns are you seeing? The goal of this activity is to begin to identify themes within your findings.
    - When complete, snap a photo of your categorized sticky notes for future reference.

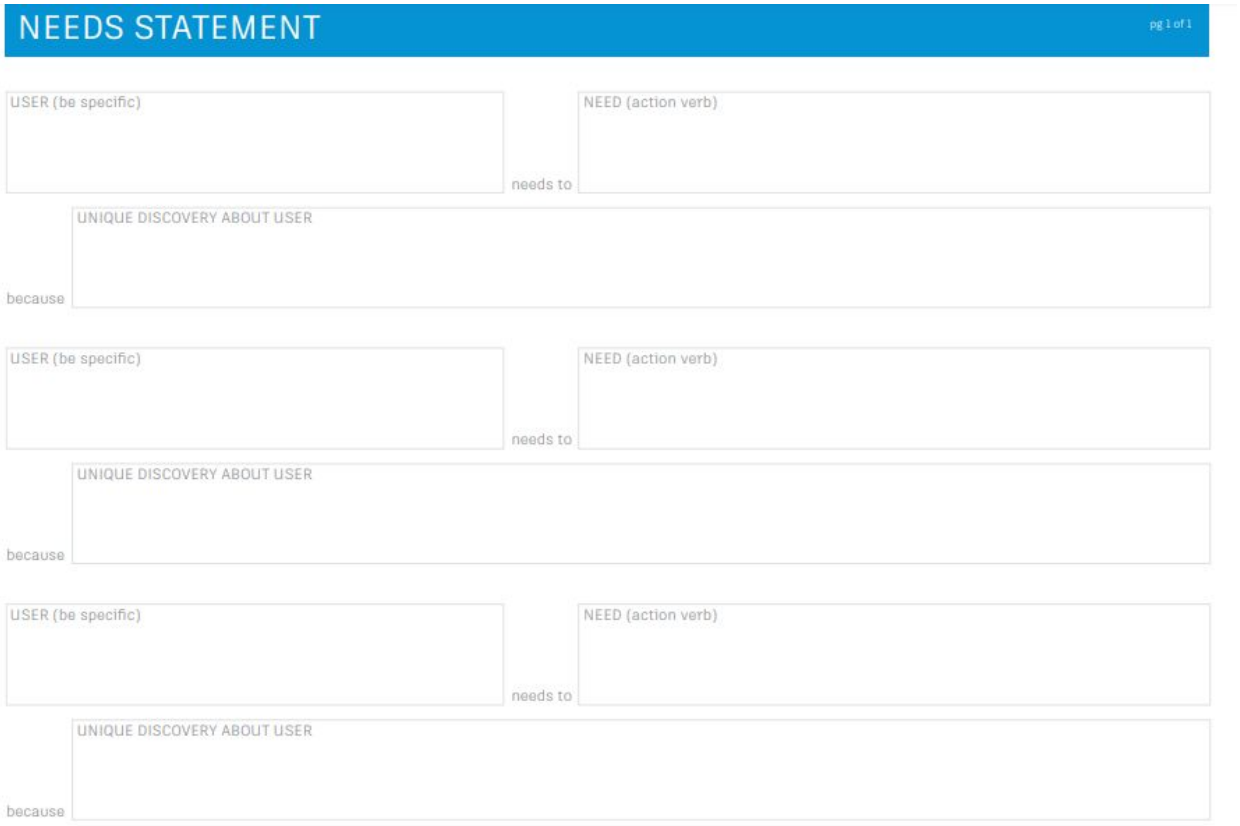


- **Activity 2: Empathy Map**
  - The Empathy Map activity helps designers unpack their observations from the Understand phase of the design process with a focus on the feelings and behaviors of users.



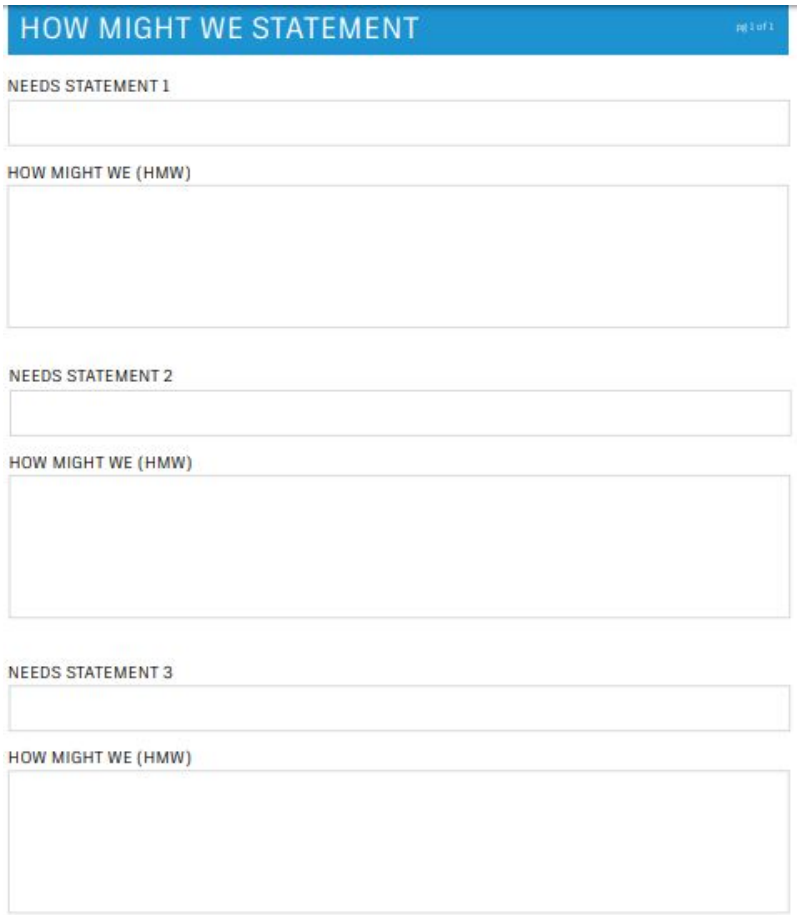
- **Activity 3: Needs Statement**
  - The purpose of creating a Needs Statement is to translate your results from the Download and Group and Empathy Map activities into an actionable statement that can be used in the next phase of the design process.
  - a Needs Statement is a simple formula that helps you re-frame the broad challenge you're tackling as a narrow and actionable statement. That formula typically looks like this: [User] needs to [need] because [unique discovery].

- Collect your materials (sticky notes and a marker) and find a place to work that has a large, flat surface like an empty wall, a table, or a whiteboard. On a whiteboard or large piece of paper, sketch three columns with the following titles: User, Need, and Unique Discovery.
- Try to write down at least one Unique Discovery for each group identified in your “Define and Group”
- look at your list of Unique Discoveries. Make sure you have at least one action-oriented need for each. Now place your new sticky notes in the Needs column of your workspace
- Now you will look at the user. Like a fill-in-the-blank sentence, choose several different combinations of Needs and Unique Discoveries, and describe a specific type of user to complete each sentence, and add them to the User column of your workspace.

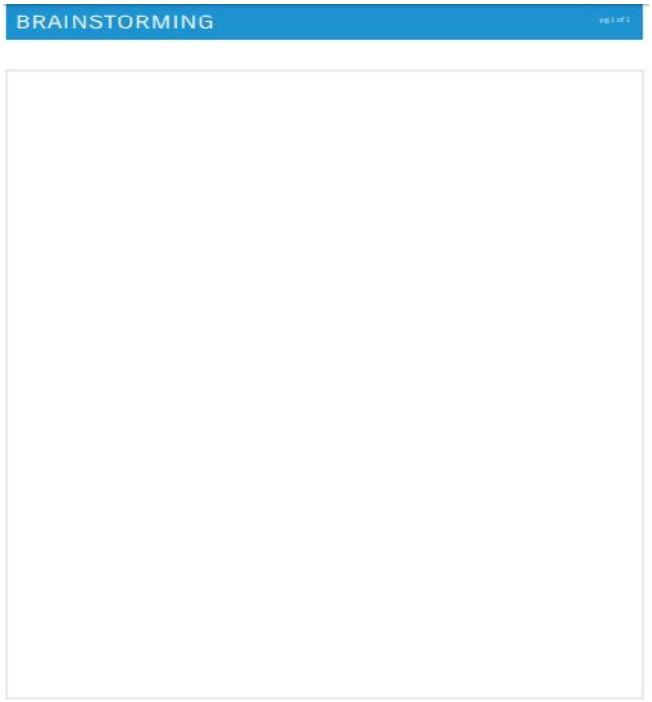


Ideate

- **Activity 1: “How Might We” statement**
    - In this activity, you’ll create a tool that helps designers launch brainstorming sessions.
    - Begin by reviewing your three final Needs Statements from the previous activity and rephrasing each as a question beginning with “How might we…?” you’re going to be using this question to brainstorm, so it should be written in a way that allows us to generate many possible answers!
    - Finally, narrow your list of potential HMW statements to three-to-five final options. Choose the statements that feel most compelling to you—you’ll be the one brainstorming with them, after all!

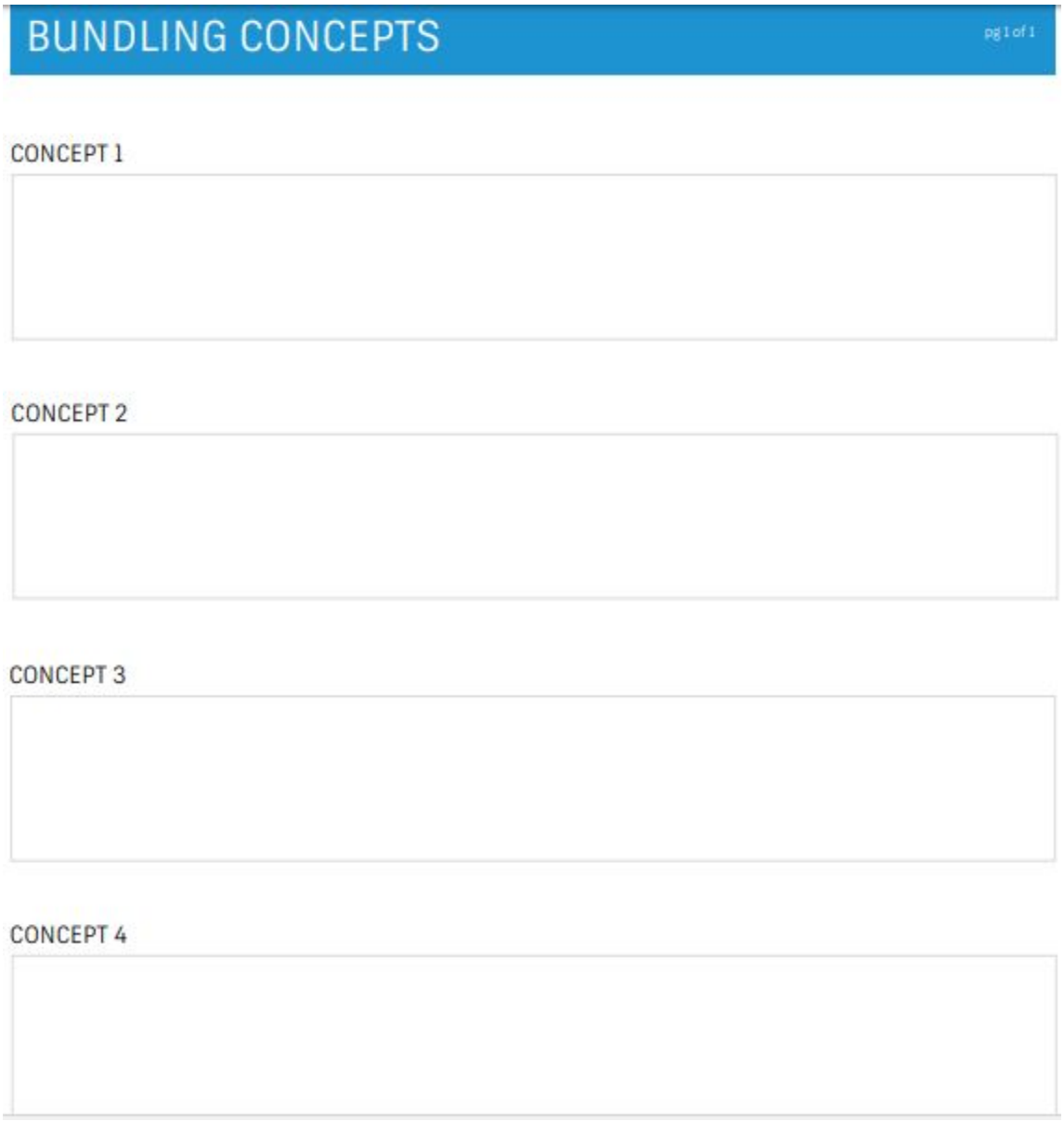


- **Activity 2: Brainstorm**
  - In this activity, you'll (finally!) begin to brainstorm potential solutions to the design challenge.Review your How Might We statements from the previous activity. These will be your prompts for the brainstorm.These are a simple set of eight rules identified by seasoned designers to foster successful brainstorming.
    - One Conversation at a Time (don't talk over each other)
    - Go for Quantity (come up with as many ideas as you possibly can!)
    - Headline! (keep your ideas short, like a newspaper headline)
    - Be Visual (feel free to use drawings instead of words to represent ideas)
    - Build on the Ideas of Others
    - Encourage Wild Ideas (go crazy—it doesn't matter if an idea feels impossible, include it!)
    - Stay on Topic (crazy ideas are good; crazy ideas that don't relate to the challenge are distracting)
    - Defer Judgement (every idea is a good idea; this is not the time to critique or rule out anything)



- **Activity 3: Find Analogous Inspiration**
  - In this activity, you will learn how to expand your brainstorming by seeking inspiration from analogous situations; that is, situations that are different from the challenge you're solving.
  - Using your favorite HMW from the Brainstorming activity, begin by making a list of behaviors, actions, and feelings related to your chosen HMW.
  - Try to come up with a minimum of 10 different behaviors, actions, and feelings.
  - Now begin a second list of situations that have nothing to do with the challenge

- **Activity 4: Bundle and Choose**
  - In this activity, you'll evaluate your potential solutions and choose one idea to move forward with.
  - Make a list of the top three-to-five ideas you'd like to potentially move forward with, and circle the one idea you plan to tackle first.



BUNDLING CONCEPTS

pg 1 of 1

CONCEPT 1

CONCEPT 2

CONCEPT 3

CONCEPT 4

Prototype and test

- A prototype is not your final product. (It should be cheap and fast to build!).The prototype is not for you, it's for your users. (It needs to be tested with real potential users!)
- Two common categories of prototypes used by designers include
    - the Concept Prototype
    - the Working Prototype
- Prototypes can include any of the following (and much more):
    - Models of your idea made of cardboard and scrap material
    - Paper mockups of apps and digital products
    - Storyboards of an experience
    - Digital mockups (using tools ranging from PowerPoint to Sketch)
    - Skits and simulations
    - Craigslist posts, Facebook ads, and other public forums to solicit feedback
- Always push yourself to test your ideas in the fastest cheapest simplest way possible.
- User feedback is the number 1 for prototyping.Check out this ted talk about developing google glass https://www.youtube.com/watch?v=d5_h1VuwD6g
- **Activity 1: Define Your Assumptions**
    - In this activity, you'll decide how to prototype your idea by identifying your key assumptions about the ideas that should be tested to determine its potential success.
    - An assumption is a key element of an idea that needs to work for the idea as a whole to work. Assumptions come in several varieties:
        - A pivotal assumption is an assumption that must be true for your idea to work.
        - A risky assumption is an assumption that is, well, risky. You may have some pretty big doubts about it.
    - Once you've chosen an idea you're happy with and listed as many related assumptions as possible, write your top three-to-seven assumptions on your Top Assumptions Worksheet.Start the list with assumptions that are

both pivotal and risky, then move on to those that are only pivotal, and finally list those that are only risky.Hold onto this sheet for future reference so you can track which assumptions are proven and disproven throughout your prototyping process.

TOP ASSUMPTIONS pg 1 of 1

#	ASSUMPTION	DETAILS	PROVEN?	DATE	EVIDENCE
		☐ PIVOTAL ☐ RISKY			
		☐ PIVOTAL ☐ RISKY			
		☐ PIVOTAL ☐ RISKY			
		☐ PIVOTAL ☐ RISKY			
		☐ PIVOTAL ☐ RISKY			
		☐ PIVOTAL ☐ RISKY			
		☐ PIVOTAL ☐ RISKY			

- **Activity 2: Create and Test a Prototype**
  - In this activity, you will design, build, and test a prototype of your idea. It's time to get your hands dirty! You may need these Miscellaneous prototyping materials, possibly including cardboard, paper, scissors, paper clips, rubber bands, and/or a computer with PowerPoint or Keynote, and so on.
  - Begin with your top assumption from the Top Assumptions Worksheet you completed in the previous activity. It's time to think like a scientist. What is the cheapest, quickest test you can run to prove (or disprove) your assumption? If an idea comes to mind right away, great! If not, you might want to run a little brainstorm about this. Make a list of potential tests.

- Once you have a test in mind, use the Test Worksheet to give it a name, and write down a description. Where and when will you run your test? What metrics will you use to measure success? Pre-orders? Votes? Smiles? It's up to you.
- In the second section of the Test Worksheet, write down which assumption(s) you'll be testing with this particular prototype. Define the minimum requirements that must be met to prove the assumption. For example: "More than 60% of cafe owners will pre-order my product after reviewing my brochure mockup." Be realistic and honest with yourself.
- When it's time to run your test, be sure to take careful notes and lots of pictures to record your findings. Afterward, take a few minutes to write a summary of the test while it's fresh in your mind, preferably the same day. Were your assumptions proven or disproven? Note these results on your Test Worksheet and Top Assumptions Worksheet.

TEST

pg 1 of 2

DETAILS

TITLE	LOCATION	DATE(S)

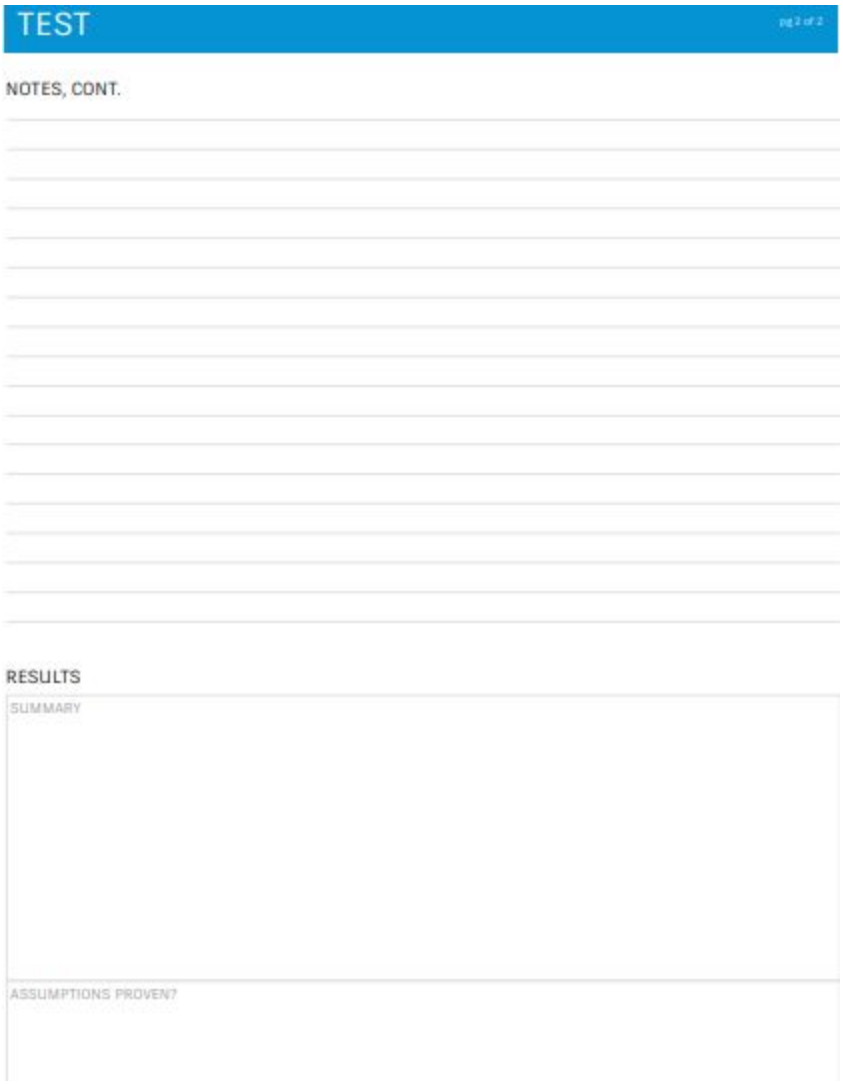
DESCRIPTION

METRICS How will you measure success?

ASSUMPTIONS

ASSUMPTION(S) What assumptions will this prototype test?	SUCCESS METRICS What minimum requirements must be met to prove this assumption?

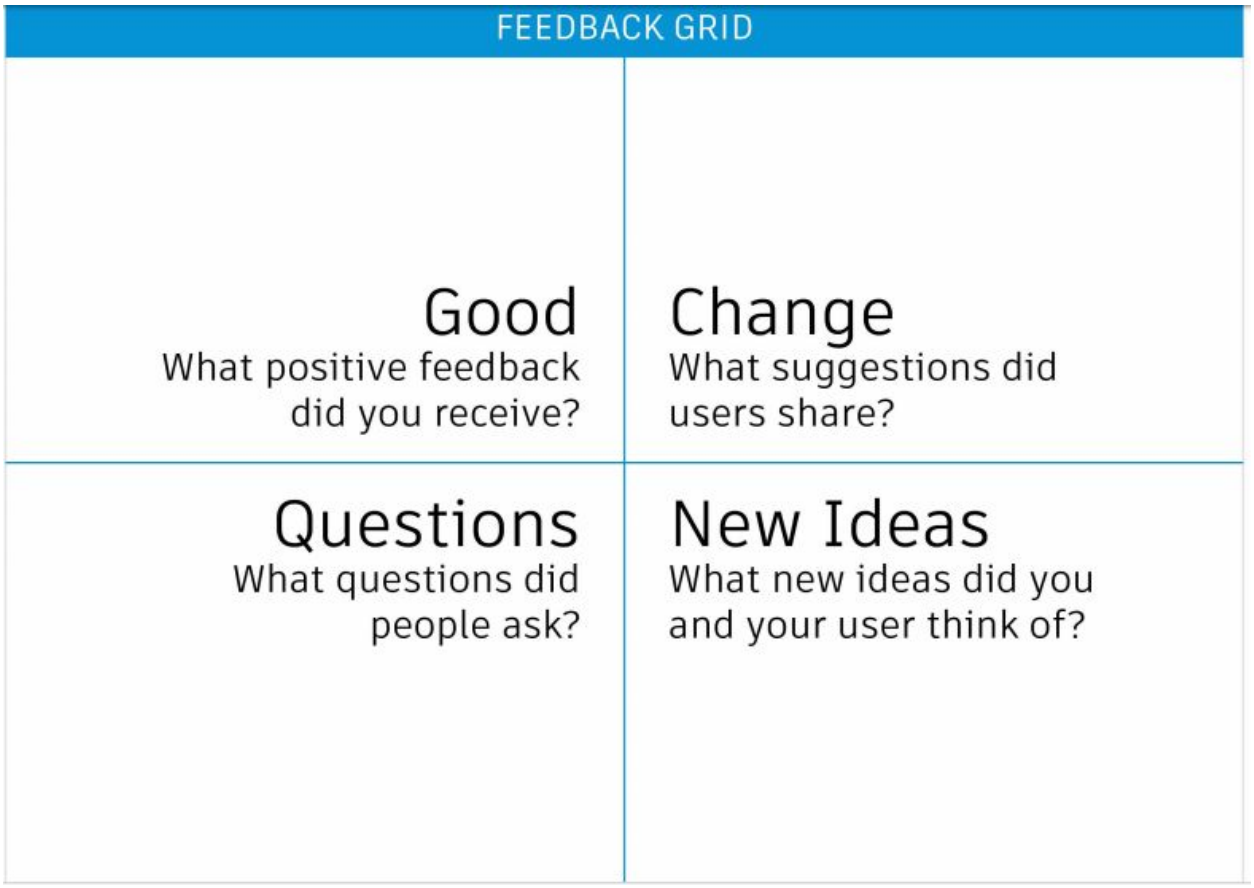
NOTES



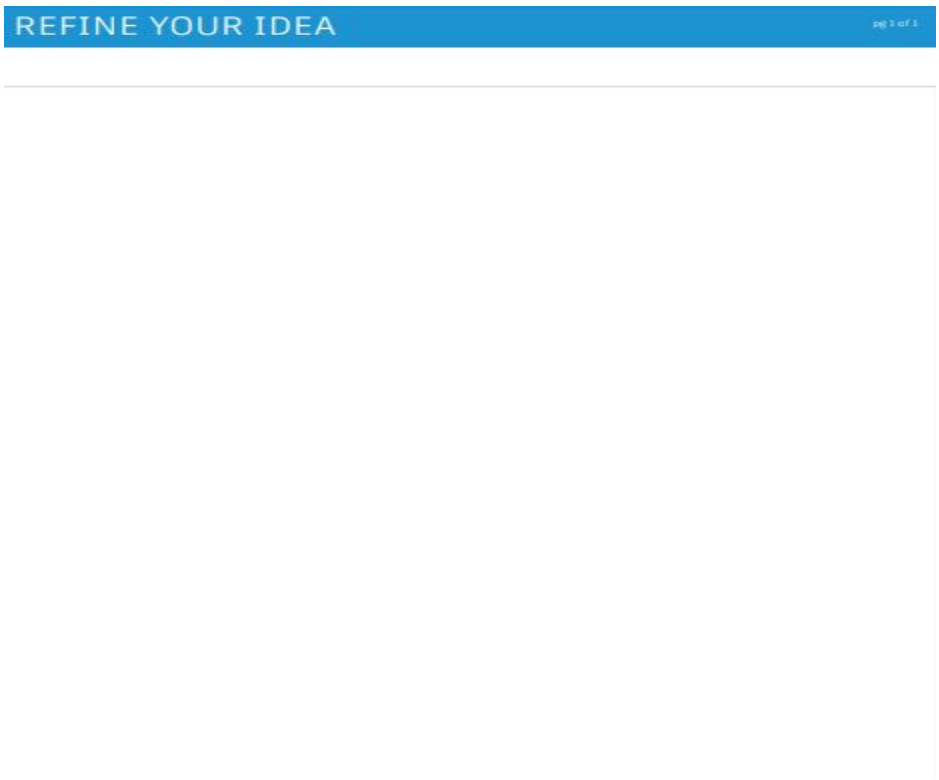
Refine

- Iteration is key to the design process. From now on, your role will be to continue to revise and advance your idea until it effectively meets the needs stated in your Needs Statement.Iteration is defined as the process of doing something again and again usually to improve it.
- **Activity 1: Collect Feedback**
    - In this activity, you will unpack observations from your test to identify next steps for your prototype by creating a Feedback Grid.

- Create a large, four-quadrant layout with the following labels: Good, Change, Questions, and Ideas. This can be written on a whiteboard, marked out with tape, or simply sketched onto four pieces of paper.
- You're now going to unpack your findings from your test with users just like you did earlier in the Download and Group and Empathy Map activities. Using one sticky note per response, write down the specific behaviors, quotes, actions, and emotions you observed.
    - Good (upper left): What positive feedback did you receive about your prototype?
    - Change (upper right): What suggestions did people share for changes to your existing idea/prototype?
    - Questions (lower left): What questions did people have about your prototype?
    - New Ideas (lower right): What brand new ideas did you and your users think of during the test?



- **Activity 2: Refine Your Idea**
  - In this activity, you will determine next steps to continue developing your idea until it meets the needs in your chosen Needs Statement.
  - If your test successfully validated (proved) your top assumption, you can now develop prototypes to test your remaining assumptions. If your test invalidated (disproved) your top assumption, you can revisit the top ideas from your Brainstorming activity and restart the Define Your Assumptions activity with a different idea. Remember, the design process is rarely perfectly linear; you may even have to do this several times.



References:
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By:Aya Mostafa

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